In the Drawing:

Fig. 4 has been amended as shown in the marked-up-in-red copy thereof enclosed herewith.

REMARKS

Claims 40-48 have been added and claims 7-31, 35-37 and 39 were previously canceled without prejudice. Claims 1-6, 32-34, 38 and 40-48 are pending in the application. Reconsideration of the application is requested in view of the amendments and the remarks to follow.

The amendments to the specification update information relative to patent documents referenced in the specification and/or address minor informalities noted during review. No new matter is added by the amendments to the specification.

The amendment to the drawing brings the drawing and the specification into mutual conformance. More specifically, inadvertent employment of a duplicative reference character with respect to divergent elements is ameliorated via amendment. No new matter is added by the amendment to the drawing.

Revised formal drawings are enclosed herewith. The Examiner's approval of the amendment to the drawing is requested. Applicant also notes that neither the Office Action dated June 3, 2004 nor the Office Action dated September 9, 2004 include notification as to status or acceptance of the drawing. Clarification of the status of the drawing is respectfully requested.

New claims 40-48 are supported at least by page 8, line 15 through page 33, line 4 of the application as originally filed. No new matter is added by new claims 40-48.

Substantive Claim Rejections

Claim Rejections under § 102

The Office rejects all of the pending claims (1-6, 32-34, and 38) under §102. For the reasons set forth below, the Office has not shown that cited reference anticipates (under §102) the rejected claims. Accordingly, Applicant respectfully requests that the rejections be withdrawn and the case be passed along to issuance.

The Office's rejections are based upon this reference: **Carlstrom**: *Kaman Carlstrom,* US Patent No. 5,875,264 (issued 2/23/1999).

Overview of the Application

The Application describes a technology for recognizing the perceptual similarity of the content of digital goods (e.g., digital music clips and video clips). The Application introduces a new hashing technique. More particularly, this new hashing technique produces hash values for digital goods that are proximally near each other, when the digital goods contain perceptually similar content. In other words, if the content of digital goods are perceptually similar, then their hash values are, likewise, similar. The hash values are proximally near each other. This is unlike conventional hashing techniques where the hash values of goods with perceptually similar content are far apart with high probability in some distance sense (e.g., Hamming).

The Application describes a technique for recognizing perceptual similarity of content of such goods by comparing "recognition" hash values of the goods. This implementation generates proximally similar (i.e., near) unique identifiers

(e.g., hash value) even though some forms of alterations (including intentional and unintentional) have been done to a specimen of the original digital good, given that the altered specimen is perceptually similar to a human observer when comparing the altered specimen with the original specimen. However, if the altered specimen is perceptually distinct, the hashing technique produces a hash value that is not proximally near the hash value of the original.

The Application describes two exemplary approaches for generating a hash value: Approach A and Approach B. Approach A is particularly suited for applications where there is little or no concern about malicious attacks. Approach B is particularly suited for those applications where there is a concern about such attacks.

Generally, isolated significant components of a signal are not robust. The Application describes an exemplary content-similarity recognizer which applies non-linear filtering to eliminate such "spike-like" components. On the other hand, around big masses of significant data, the exemplary content similarity recognizer introduces artificial "blurred tolerance regions" to gain stability (in shape and size) against small differences between signals.

In general, attacks on signals tend to split, distort, bend, stretch, and translate the smaller masses more than the larger ones. The exemplary content similarity recognizer includes iterative and convergent techniques that introduce a self-correcting mechanism.

Carlstrom

The Office cites **Carlstrom** as its reference in its anticipation-based rejections.

Carlstrom describes a technology for character recognition system employs a "hashing" technique of imaged pixels wherein a digital image constituting an array of pixels is divided into a series of sub-arrays. The sub-array digital signal patterns themselves correspond directly to addresses in associated system memories. Each memory address indicates a predetermined set of the possible characters. There is an apparatus for combining the list of possible characters so that signals corresponding to only one character are output.

Anticipation Rejections

Anticipation Rejections Based upon Carlstrom

The Office rejects claims 1-6, 32-34, and 38 under USC § 102(b) as being anticipated by **Carlstrom**. Applicant respectfully traverses the rejections of these claims. Based on the reasons given below, Applicant asks the Office to withdraw its rejection of these claims.

Claims 1 and 38

In its rejection of these claims, the Office states the following on pages 2 and 3 of the Action:

> Regarding claims 1 and 38, Carlstrom discloses a computer-implemented method facilitating similarity recognition of a digital signal, the method comprising:
>
> obtaining a digital signal (camera 202 in figure 18 obtains a digital image signal); and
>
> deriving a recognition value (figure 18: output mapping circuitry 206 derives recognition values for each of a plurality of patterns contained in the digital signal) representative of the digital signal such that perceptually distinct digital signals result in recognition values that are approximately independent of one another and perceptually similar digital signals result in proximally similar recognition values (in figure 18: different sub-arrays of the digital image signal are input to a hashing mechanism 206, which maps the patterns contained in each of the sub-arrays to an associated memory 208-212, thereby deriving a "hashed," or recognition, value for each sub-array;
>
> each memory contains a set of possible pattern recognition values (or "solutions") for the associated image portion - see figures 1-3;
>
> then the combining circuitry 216 combines the sets of recognition values to yield a final recognition value (e.g. a character) that is representative of the overall pattern;
>
> the system is trained so that different patterns or characters can be distinguished based on their recognition (i.e. hash) values - in other words, the recognition values of perceptually similar patterns are similar, and the recognition values of perceptually distinct patterns are dissimilar).

Applicant submits that the Office has not shown that each element and feature disclosed in these claims is disclosed by **Carlstrom**.

Using extensive training, **Carlstrom** fine-tunes its generation of zero to multiple results (see col. 15, lines 16-22) to narrow the results to one. However, it employs multiple recognition (e.g., hash) values to produce that result that distinguish one object (e.g., letter or character) from another. The object may be called a "distinguishing object."

However, unlike **Carlstrom**, the claims recite the derivation of a single "recognition value" (e.g., via hashing) of a single "digital signal" (e.g., a digital image). There is a one to one correspondence of one recognition value for its distinguishing object—digital signal.

When identifying the "recognition value" disclosed by **Carlstrom**, the Office stated the following (with emphasis added) on p. 2 of the Action: "output circuitry 206 derives recognition **values** for each of the plurality of patterns contained in the **digital signal**." As noted by the Office, **Carlstrom** does not produce a single recognition value for a distinguishing object, which is the digital signal representation of a character or letter. This alone distinguishes these claims from **Carlstrom**.

Alternatively, the Office may be indicating that one of the "recognition values" (which **Carlstrom** calls a "possible solution") produced by the output circuitry 206 of **Carlstrom** corresponds to one of "plurality of patterns (which **Carlstrom** also calls "signal sub-arrays"; e.g., 16-22 in Fig. 2 of **Carlstrom**) contained in the digital signal." If that is the case, then each of the "pluralities of patterns" would have to satisfy the remainder of the recited claims in order to be anticipatory.

Specifically, the claims recite that derived recognition values of "perceptually distinct" signals (e.g., images that look different from each other) are "approximately independent" from each other. So, to anticipate, Applicant submits that **Carlstrom** must disclose that its "possible solutions" (produced by **Carlstrom's** output circuitry 206) for perceptually distinct "sub-arrays" are approximately independent from each other.

Applicant submits that the Office has not identified any specific section of **Carlstrom** where **Carlstrom** discusses that perceptually distinct "sub-arrays" produce "possible solutions" that are approximately independent from each other. Applicant submits that the Carlstrom instead focuses on the perceptual distinction of the overall digital signal (with is representative of a character or letter).

Furthermore, the claims recite that derived recognition values of "perceptually similar" signals (e.g., images that look similar to each other) have values that are "proximally similar" (e.g., near in value). So, to anticipate, Applicant submits that **Carlstrom** must disclose that its "possible solutions" (produced by **Carlstrom's** output circuitry 206) for perceptually similar "sub-arrays" are proximally similar to each other.

Applicant submits that the Office has not identified any specific section of **Carlstrom** where **Carlstrom** discusses that perceptually similar "sub-arrays" produce "possible solutions" that are proximally similar to each other. Indeed, as discussed on pp. 3-5 of the Application, this feature is not found in conventional hashing schemes (like that used in **Carlstrom**).

Since **Carlstrom** does not disclose that the "recognition values" (e.g., hash values) of its distinguishing objects are proximally similar to each other. Assuming that the distinguishing objects are the digital signals representing a letter or character, Applicant submits that **Carlstrom** never discloses that the output of the combining circuitry 218 or output circuitry 219 produces proximally similar results when the subject digital signals are perceptually similar. Assuming that the distinguishing objects are the sub-arrays of the digital signal, Applicant submits that **Carlstrom** never discloses that the output of the mapping circuitry 206 produces proximally similar results when the subject sub-arrays are perceptually similar.

As shown above, **Carlstrom** does not disclose all of the claimed elements and features of these claims. Accordingly, Applicant asks the Office to withdraw its rejection of these claims.

Claims 2-6

These claims ultimately depend upon independent claim 1. As discussed above, claim 1 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the

Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

Claim 32

In its rejection of these claims, the Office states the following on page 4 of the Action:

> Regarding claim 32, Carlstrom discloses a computer-implemented method facilitating similarity recognition of a digital signal, the method comprising:
>
> obtaining a digital signal (camera 202 in figure 18 obtains a digital image signal);
>
> non-linear filtering of the signal to eliminate isolated significant components of the signal (figures 24 and 25 and column 20, lines 52-61: a non-linear median filter is used to remove "isolated pixel noise");
>
> deriving a recognition value from the filtered signal, the recognition value being representative of the digital signal such that perceptually distinct digital signals result in recognition values that are approximately independent of one another and perceptually similar digital signals result in proximally similar recognition values (i.e. the mean-filtered signal is applied to the system of figure 18 and produces the claimed recognition value - see the explanation for claim 1).

Applicant submits that the Office has not shown that each element and feature disclosed in this claim is disclosed by **Carlstrom**.

The Office indicates that the median filter disclosed by **Carlstrom** is a "non-linear" filter like that recited in this claim. However, Applicant is unable to identify the specific portion where **Carlstrom** discloses that its median filter is non-linear. Applicant asks the Office to identify that specific portion or provide some alternative support for the conclusion that disclosed median filter is non-linear as recited in the claim.

Using extensive training, **Carlstrom** fine-tunes its generation of zero to multiple results (see col. 15, lines 16-22) to narrow the results to one. However, it employs multiple recognition (e.g., hash) values to produce that result that distinguish one object (e.g., letter or character) from another. The object may be called a "distinguishing object."

However, unlike **Carlstrom**, the claims recite the derivation of a single "recognition value" (e.g., via hashing) of a single "filtered signal" (e.g., a filtered version of a digital image). There is a one to one correspondence of one recognition value for its distinguishing object—digital signal.

When identifying the "recognition value" disclosed by **Carlstrom**, the Office stated the following (with emphasis added) on p. 2 of the Action: "output circuitry 206 derives recognition **values** for each of the plurality of patterns contained in the **digital signal**." As noted by the Office, **Carlstrom** does not produce a single recognition value for a distinguishing object, which is the digital signal representation of a character or letter. This alone distinguishes this claim from **Carlstrom**.

Alternatively, the Office may be indicating that one of the "recognition values" (which **Carlstrom** calls a "possible solution") produced by the output circuitry 206 of **Carlstrom** corresponds to one of "plurality of patterns (which **Carlstrom** also calls "signal sub-arrays"; e.g., 16-22 in Fig. 2 of **Carlstrom**) contained in the digital signal." If that is the case, then each of the "pluralities of patterns" would have to satisfy the remainder of the recited claims in order to be anticipatory.

Specifically, the claims recite that derived recognition values of "perceptually distinct" signals (e.g., images that look different from each other) are "approximately independent" from each other. So, to anticipate, Applicant submits that **Carlstrom** must disclose that its "possible solutions" (produced by **Carlstrom's** output circuitry 206) for perceptually distinct "sub-arrays" are approximately independent from each other.

Applicant submits that the Office has not identified any specific section of **Carlstrom** where **Carlstrom** discusses that perceptually distinct "sub-arrays" produce "possible solutions" that are approximately independent from each other. Applicant submits that the Carlstrom instead focuses on the perceptual distinction of the overall digital signal (with is representative of a character or letter).

Furthermore, the claims recite that derived recognition values of "perceptually similar" signals (e.g., images that look similar to each other) have values that are "proximally similar" (e.g., near in value). So, to anticipate, Applicant submits that **Carlstrom** must disclose that its "possible solutions" (produced by **Carlstrom's** output circuitry 206) for perceptually similar "sub-arrays" are proximally similar to each other.

Applicant submits that the Office has not identified any specific section of **Carlstrom** where **Carlstrom** discusses that perceptually similar "sub-arrays" produce "possible solutions" that are proximally similar to each other. Indeed, as discussed on pp. 3-5 of the Application, this feature is not found in conventional hashing schemes (like that used in **Carlstrom**).

Since **Carlstrom** does not disclose that the "recognition values" (e.g., hash values) of its distinguishing objects are proximally similar to each other. Assuming that the distinguishing objects are the digital signals representing a letter or character, Applicant submits that **Carlstrom** never discloses that the output of the combining circuitry 218 or output circuitry 219 produces proximally similar results when the subject digital signals are perceptually similar. Assuming that the distinguishing objects are the sub-arrays of the digital signal, Applicant submits that **Carlstrom** never discloses that the output of the mapping circuitry 206 produces proximally similar results when the subject sub-arrays are perceptually similar.

As shown above, **Carlstrom** does not disclose all of the claimed elements and features of this claim. Accordingly, Applicant asks the Office to withdraw its rejection of this claim.

Claims 33 and 34

These claims ultimately depend upon independent claim 32. As discussed above, claim 32 is allowable.

In addition to its own merits, each of these dependent claims is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each of these dependent claims because its base claim is allowable.

Dependent Claims

In addition to its own merits, each dependent claim is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of each dependent claim where its base claim is allowable.

Conclusion

All pending claims are in condition for allowance. Applicant respectfully requests reconsideration and prompt issuance of the application. If any issues remain that prevent issuance of this application, the Office is urged to contact the undersigned attorney before issuing a subsequent Action.

Respectfully Submitted,

Dated: 3-8-07 By: _____

Kasey C. Christie
Reg. No. 40559
(509) 324-9256 x232
kasey@leehayes.com
www.leehayes.com

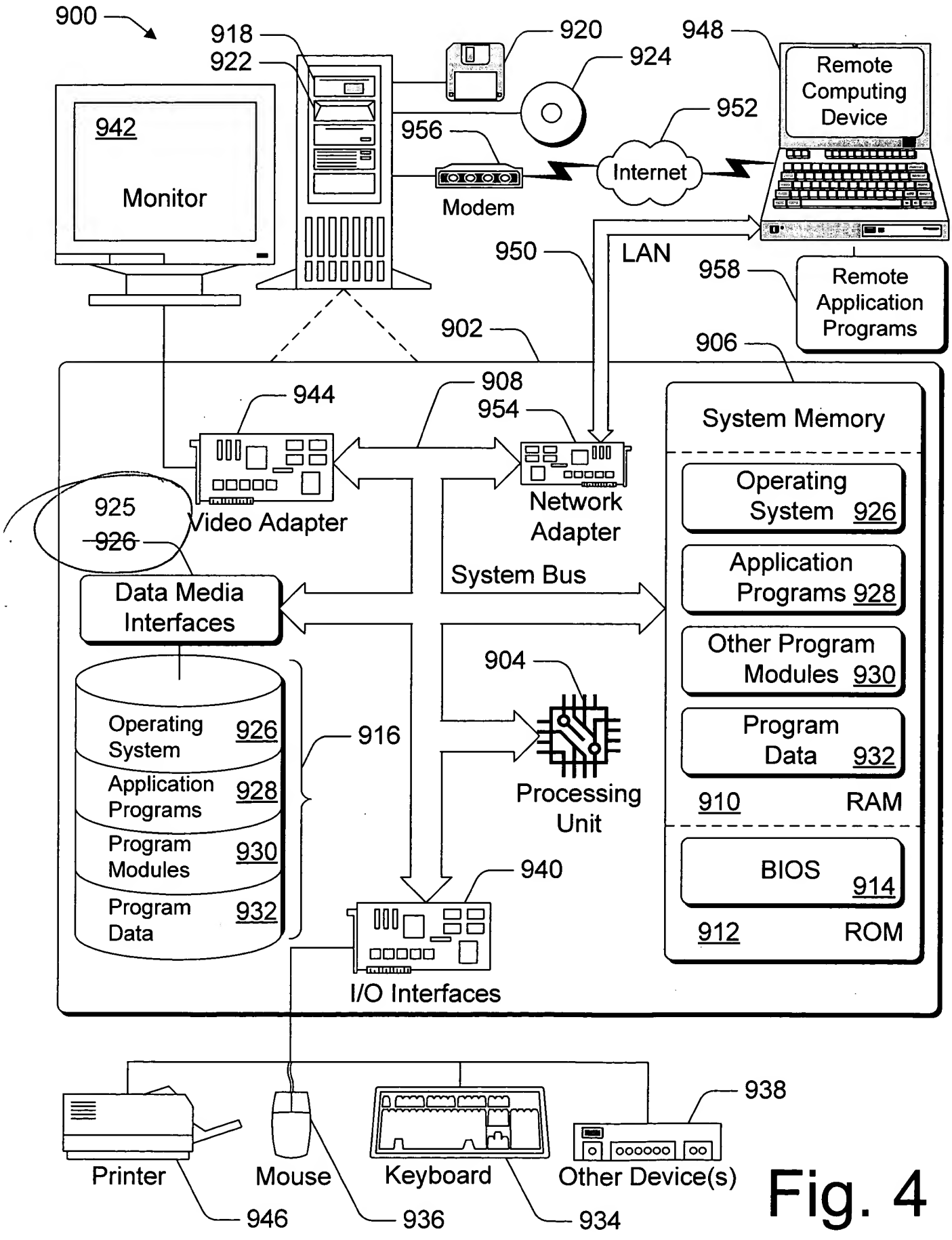
900
918
922
920
924
948
Remote Computing Device
952
942
Monitor
956
Modem
Internet
950
LAN
958
Remote Application Programs
902
906
944
908
954
System Memory
Operating System 926
Application Programs 928
Other Program Modules 930
Program Data 932
910
RAM
BIOS 914
912
ROM
Network Adapter
Video Adapter
925
926
System Bus
Data Media Interfaces
904
916
Operating System 926
Application Programs 928
Program Modules 930
Program Data 932
Processing Unit
940
I/O Interfaces
938
Printer
Mouse
Keyboard
Other Device(s)
946
936
934

Fig. 4